



MARCH 29, 2018

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Mike Blackham.
Kaysville City Building Official.
Kaysville City, Utah.

Regarding: Site Visit and report for the retrofit of the existing Kaysville City library located at 44 North Main Street, Kaysville Utah.

Dear Mike.

At your request I meet with you at the above referenced project site on March 22nd 2018. The purpose of the site visit was to observe the existing structural elements and layout of the building in order to provide the following report on the potential retrofit requirements to convert this existing facility to new City Offices.

During the site visit we able to observe the exposed structure of the walls, the attic space and associated roof framing and the crawl space and associated floor framing. The following provides a list of my observations and recommendations.

- 1) The existing building was built in the 1940's, it is an approximately 6100sf single level rectangular structure with the following structural systems.
Roof: 1X Plank board sheathing supported on framed in place dimensional lumber roof trusses at 24"OC spanning from the front to back walls.
Floor: 2X floor joists running from front to back supported on Multi Ply 2X floor beams running side to side at 1/4 span points, supported on stacked block piers supported on shovel formed concrete footings.
Walls: 2x4 stud framed walls with rock veneer attached directly to the outer face of the stud.
Foundations: Exterior perimeter foundations are short formed concrete foundation walls on perimeter continuous footings. Interior foundations are stacked block on shovel formed concrete footings.
- 2) **During the site observation the following items of concern were noted.**
 - a. The lack of roof overhang and associated perimeter roof drainage allows for water to run down the face of the veneer walls infiltrating the mortar joints and permeating the walls. The upper perimeter precast cap also allows for water infiltration behind the rock veneer. Many areas of loose rock were observed.
 - b. The walls (at the two exposed locations) show obvious signs of water infiltration. The wire backing for the veneer that has been nailed onto the outer face of the studs has almost completely corroded.
 - c. No air cap or means of moisture control or prevention has been provided within the wall construction.





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- d. No wall sheathing or means of lateral bracing has been provided in the wall construction.
- e. The floor has settled excessively in many locations. No positive connection is provided between the floor beams and interior masonry piers.
- f. The sidewalk at the front of the building has been poured directly against the rock veneer and above the foundation.

3) Discussion of required retrofit.

a. The most significant area of deficiency within this structure is the lateral force resistive system. Based upon the site observation there is little capacity for this structure to withstand even a moderate Seismic event. The only apparent lateral capacity is the sheet rock on the inside face of the walls, which would be extremely deficient for the required capacity of this structure.

Due to the considerable moisture control issues with the exterior walls there are no easy retrofit procedures for this building. Removal of the existing studs without significant additional damage to the veneer would be a substantial challenge. It is likely that a complete demolition and reconstruction of the exterior walls will be required. This will allow for the following:

- Correct moisture control, including vapor barrier and air gap between the veneer and the supporting structure.
- The correct connection of the veneer to the supporting structure to support the veneer for out of plane loading under a Seismic event.
- Construction of shear walls for lateral force resistance capacity.
- Connection to the roof diaphragm (see discussion of roof below) for in plane and out of plane load transfer.
- Connection to the foundation (see discussion of foundation below) for shear transfer and shear wall hold- down connection.

b. The roof framing appears to be in relatively sound condition. The roof will need to be sheathed to provide for the required diaphragm shear capacity. In plane and out of plane connection of the roof diaphragm to the walls will be required. (Observation of the existing connection was not available at the site visit). It is also recommended that overbuild sections at the roof perimeter be constructed to allow for a roof overhang and associated protection of the walls and veneer.

c. The exterior foundation appears to be in relatively sound condition (at the limited areas that were observed). Testing of the foundation to determine reinforcement will be required so that analysis of vertical load and holdown loading capacity can be determined.





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d. The floor system will require retrofit. Many areas of excessive settlement were observed. New interior foundation piers and positive connection to the floor structure will be required. Due to the moisture infiltration within the walls it is likely there are many floor perimeter locations with rot issues. Along the front wall line, the side walk has been poured directly against the veneer and above the foundation. Investigation of this area will likely reveal considerable water infiltration issues.

4) **Conclusions.**

- a. Based upon the above observations and associated discussion this structure is not suitable to be occupied until significant retrofit has occurred.
- b. A thorough field investigation will be essential to provide the required structural analysis and retrofit design package.
- c. This report discusses structural considerations only. Architectural, Mechanical and Electrical retrofit will likely be required.
- d. Design and Construction cost analysis is beyond the scope of this report. Due to the extensive deficiencies and associated required retrofit it is recommended that serious consideration be given to demolition of this structure and construction of a new facility.

Please call if we can be of any further assistance or if you have any questions or comments.

Very truly yours,

Philip R. Roberts S.E. SECB.

ESI ENGINEERING, INC.

